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ASEPTIC SURGERY.

The Collected Papers of Joseph, Baron Lister. Two vols. Vol. i., pp. xliv+429; vol. ii., pp. vii+589. (Oxford: Clarendon Press, 1909.) Price *2l. 2s.* net.

ALTHOUGH the numerous papers collected in these two volumes were for the most part written thirty or forty years ago, their interest is in no way diminished to-day. Had the work of Lister failed to meet with due appreciation, his friends and pupils could have found no surer way of obtaining this than by the simple collection of his writings into these two volumes, and when one has said "this was his work," no further comment or eulogium is possible. In the records of most epoch-making discoveries one can read between the lines the character of the discoverer. At first sight it would seem as if the papers dealt with many and diverse subjects, but more careful study shows a remarkable unity, each one constituting a step towards the great work with which the name of Lister will always be associated.

With the exception of one or two isolated physiological papers, Lister's work was directed towards the elucidation of the meaning of the phenomena, which followed injuries to living organisms, commonly summed up under the term inflammation. Lister carried out a long series of experiments on the coagulation of blood, which must ever remain as a pattern of carefully planned and skilfully worked out investigation; and it was the relationship between inflammation and vascular thrombosis which determined the point from which he attacked this problem.

Lister's observations had for their object the study of blood coagulation in the vessels themselves, and he attempted to discover why blood which coagulated so readily when shed into a basin remained fluid in contact with living or surviving tissues. His experiments upon inflamed blood-vessels, conducted largely upon the web of a frog's foot, in spite of the large amount of work which has been done on this subject, require but little revision; his experiments on the pigmentary corpuscles in the frog form one of the most brilliant demonstrations of the effect of injury on the tissue cells as distinguished from changes in the blood-vessels.

Naturally, however, the greatest interest of Lister's work centres around the papers on the use of antiseptics. Surgery was not merely revolutionised—a new science was born. His article on "A New Method of Treating Compound Fracture, Abscess, &c., with Observations on the Conditions of Suppuration," gave the result of two years' experience in the new methods. This paper was published in 1867, and reading it to-day it is difficult to conceive why theories so ably argued and so conclusively proved failed to obtain immediate acceptance; but for many years Lister shared the common fate of reformers, and had to cope with misunderstanding and misrepresentation. It is appalling to think that in the great war of 1870 and 1871 no real attempt was made to use the methods which Lister had employed for four years. The opposition, however, to Lister's methods was not unique, for in the article on anæsthetics in these volumes, written in 1861, seventeen years after the discovery of ether, Lister remarks

> "that such being the great benefits conferred by this agent it is melancholy to reflect that in many parts of Europe and even of the United Kingdom it is either withheld altogether or given so scantily as to be nearly useless."

The "sepsis" which Lister was attacking was not the sepsis which is known to-day, but actual putrefaction of the discharges from wounds, to which were attributed the septicæmia, pyæmia, and hospital gangrene which were so prevalent before the antiseptic era. It is hard to-day to think of being familiar with

> "the faint sickly smell commonly perceptible in surgical wards under ordinary treatment, and still more with the stench which prevails at the time of the daily dressing";

but at that time it was a matter of common experience. The value of the antiseptic method could not have been more severely tested than in the original men's accident ward in Glasgow Infirmary, in which it was first put in practice. Separated from this ward by a passage 12 feet wide was another similar ward, in which the death-rate from pyæmia and hospital gangrene was so high that it attracted the attention of the authorities even at this time. An excavation was made, and it was found that on a level with the floors of these two wards, with only the basement area, 4 feet wide, intervening, was the uppermost tier of a vast number of coffins, placed there during the cholera epidemic of 1849. In addition to this, one end of the surgical hospital abutted on the cathedral burial yard, in which the revolting practice of pit burial was carried out; that is to say, bodies of paupers enclosed in rough coffins were placed in large pits, which were loosely covered up with boards, and only filled in with earth when the pit was full. In such circumstances as these, Lister was able to state, at the British Medical Association meeting in Dublin, that for the nine months in which the antiseptic system had been in proper working order not a single case of pyæmia, erysipelas, or hospital gangrene had occurred in his ward, although these diseases were exceptionally rife in the other wards of the hospital.

In the first attempts at antiseptic surgery, German creosote, a crude form of carbolic acid, was introduced into the wound on a strip of lint, which was in some cases left in position; some fresh antiseptic was mixed with the blood exuding from the wound so as to form a crust, the carbolic acid in which was then prevented from evaporating by a piece of block tin; this was removed once or twice a day, and fresh carbolic acid painted on the crust to supply the place of that which had evaporated. Crude and irritating as this method was, its results were an enormous improvement on any that had been previously obtained. Of the first eleven cases of compound fracture and

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dislocation treated in this way only one died, although at this time recoveries were extremely rare, and the accident was regarded as one of the most dangerous known to surgeons.

Carbolic acid was first brought to Lister's notice by reading accounts of its deodorising action upon the sewage of Carlisle, and it is interesting to note that this, the first substance used by Lister in his antiseptic method, still retains its pre-eminence as an all-round antiseptic.

These first methods were only a beginning, and throughout the whole course of his active life Lister busied himself in perfecting his method, striving to find means whereby asepsis could be secured with a minimum irritation of tissues, without deviating in the slightest degree from those scientific principles which had guided him at the outset of his work.

The conquest of suppuration not only perfected older operations, but opened the way for new ones, and Lister himself introduced a large number of these. Joints, interference with which had been looked upon as utterly unjustifiable, were opened with impunity, fractures with vicious union were exposed and rectified, new principles in amputation introduced, and the use of the aseptic ligature, by obviating the risks of hæmorrhage, removed one of the greatest dangers of surgery.

Not the least interesting of the papers collected in these volumes is that on anæsthetics, a subject to which Lister devoted a considerable amount of attention, and in view of the recently proposed legislation it is interesting to note that Lister strongly disapproved of specialists in this branch of practice, holding that the administration of an anæsthetic called for care rather than for special skill and experience.

Lister in all his writings frankly and gratefully acknowledged and appreciated the work of others, especially Pasteur, and that "hard-worked general practitioner," Koch. His work is its own monument; it has given modern surgery to mankind, and so simplified its performance that operations can be performed without any particular comment which fifty years ago would have left the whole world aghast at their daring.

A NATURALIST IN ECUADOR.

Nel Darien e nell' Ecuador. Diario di viaggio di un Naturalista. By Dr. E. Festa. Pp. xvi+397. (Torino: Unione Tip.-Editrice Torinese, 1909.) Price 10 lire.

DR. E. FESTA'S main object was the zoological exploration of Ecuador. However, as the isthmus of Darien or Panama lies on the way to Ecuador, and since this interesting country happened to pass through one of its revolutions, he spent the time from the months of May to September, 1895, on the isthmus, chiefly among the intricate inlets of the Gulf of San Miguel, on the Pacific side, extending thereby his collecting over every class of the animal kingdom, from sponges to mammals.

After the political conditions had become a little more settled, he went to Ecuador in September, 1895, and stayed there to April, 1898. Entering the country by Guayaquil, he travelled east to Cuenca and beyond, to the headwaters of the Rio Santiago of the Marañon system, and northwards by Quito to Julian, near the frontier of Colombia. His travels, extending, roughly speaking, from 4° latitude south to 1° north, and between 80° to 78° longitude west, cover only a small part of the vast country of Ecuador, but he explored it thoroughly.

He was much indebted to the President of the Republic; for instance, on the strength of his official credentials the local authorities occasionally commandeered porters and mules. Above all, he was helped by the missions of the Società Salesiana de Torino, and he had the inestimable advantage of being accompanied on his perilous excursions through the forests of the Santiago district by a former compatriot, Sr. G. Pancheri. An agreeable feature was the hospitality offered by many Ecuadorean owners of haziendas. About 500 specimens of mammals, more than 3000 birds, 150 different kinds of reptiles and amphibians, as many kinds of fishes, and ever so many invertebrates, were brought together and given to the Royal Museum at Turin. They testify to the richness of the fauna, and last, not least, to the enormous labours of Dr. Festa and the Italian collector whom he was able to take with him. However, they took whatever kind they could, and of every kind as many specimens as possible. For instance, no fewer than nine condors were shot at one spot, and in typically national style the travellers spread nets in forest and garden, and gloated over the numbers of little beauties ensnared. The step thence to that pest, the plume-hunter, seems but small; at least, it is a bad example to the natives.

Naturally our author experienced many ups and downs, but he had no hairbreadth escapes, as such are now of rare occurrence to veracious travellers. Already in the mangrove swamps of Darien he suffered much from fever and severe gastric troubles, and camp life was often utterly spoiled by the pests of insects. It was not only the stinging, poisonous kinds, but a great aggravation were the stingless bees, Melipone, big and small, which in their numbers insinuated themselves into the hair, mouth, nose, and ears. To make work possible, the traveller had to put smouldering branches upon the table. Some kind of Oestrus stung Dr. Festa in the abdomen, causing several months of torment, and after opening the swelling he extracted a fat maggot, four centimetres in length. The horses suffered indirectly from the bites of the blood-sucking bats, Desmodus, because flies deposited their eggs in the little wounds, and the maggots caused enormous ulcers. Sand-fleas, *Sarcopsylla penetrans,* were a plague in many places, and every specimen of digging rodents had its feet infested with them.

Several specimens of the Andine bear, *Tremarctos ornatus,* were procured. This creature, preferring to travel in comfort, prepares its bed on the ground, by covering a space about a yard in diameter with branches and twigs to lie upon during the night.

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